

obstacles so they will not tangle or bind as you raise the mast into place. Second, drop the skirt wires to the ground and extend them away from the mast so when the mast is raised they will trail toward the mast while on the ground. The skirt wires are # 14 stranded copperweld wire and they will have a tendency to coil and kink if not properly laid out on the ground. **BE CAREFUL** not to let the ends of the skirt wires come into contact with your eyes. Wear eye protectors or eye glasses to prevent eye injuries!

Push the first section of the mast up keeping the guy lines clear from the skirt wires. When the first section is fully extended, insert the cotter pin in place and bend one side of the cotter pin around the mast. Tighten the locking clamp to secure the top and middle mast sections together. Install the braided mast jumper wire across the mast joint before pushing up the middle mast section.

NOTE: Install a mast jumper wire (PN #UH3007 and UH3008) at each mast section interface for proper electrical connection. The UH3007 jumpers connect across the first to second and second to third mast joints. UH3008 jumpers connect across the third to fourth mast joints and the fourth to top hat extender rod assembly.

Push the remaining mast sections up until the mast is fully extended to the 37' height. Insert the bottom cotter pin and tighten the final locking clamp. Install the lower braided mast jumper across the mast joint for good electrical connection. Tension the top and middle guy lines at this time keeping the mast as straight as possible. Use a carpenter's level to assure the mast is plumb. Looking up from the bottom section you will be able to tell where to adjust the guy lines for correct tension allowing for proper mast alignment. Do not allow the mast to bow. It will be difficult to lower and raise in the future if you need to do so.

#### **SPREADER AND SKIRT TERMINATION**

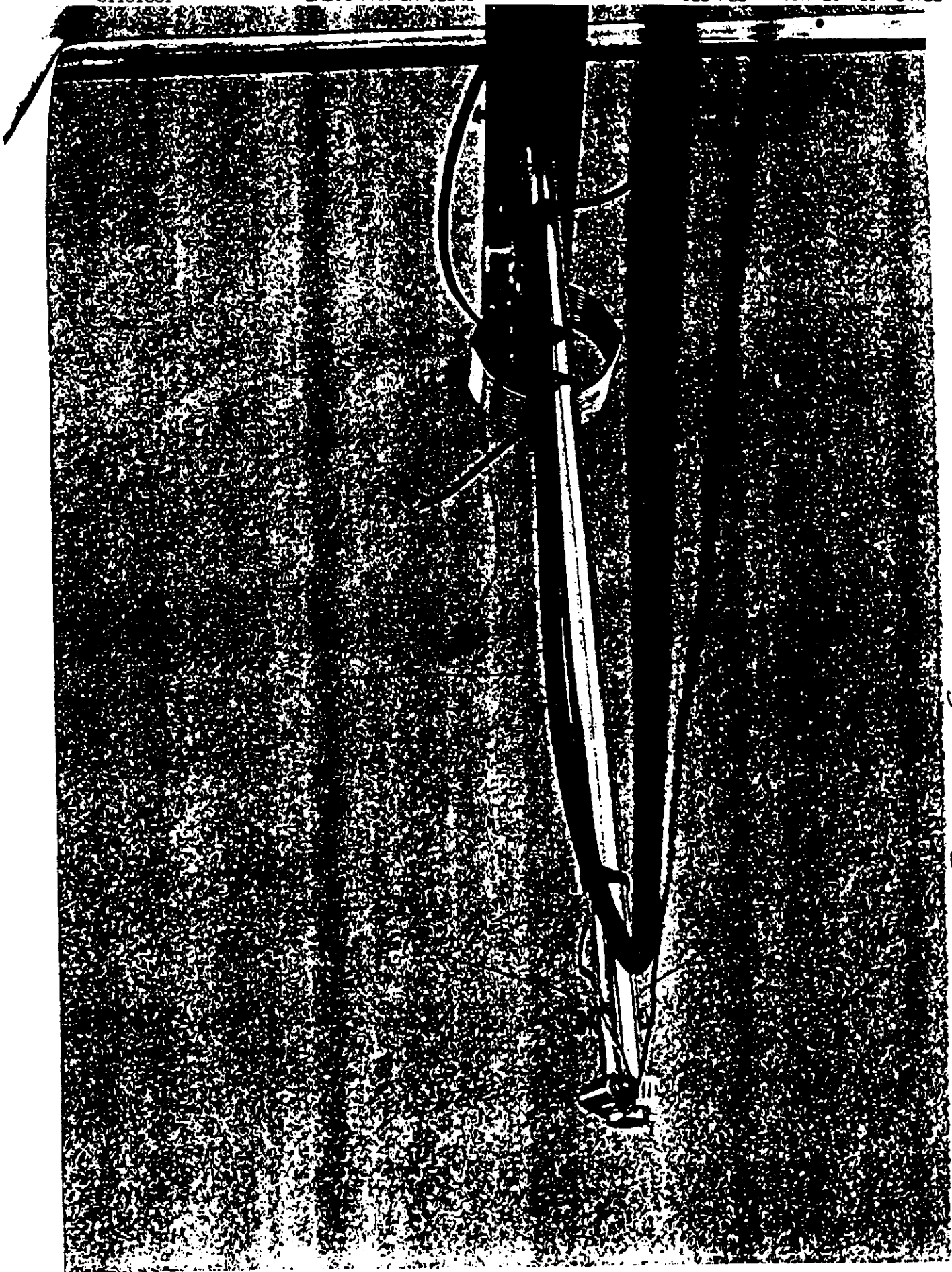
Insert one spreader rod (PN UH3001) into each two 3/4" hole in the insulator assembly marked "A" and "B". Each spreader rod hole has a correspondingly smaller hole located 90 degrees around and on the same plane. One hole is for the locking screw that holds the spreader rod in place and the other is used to visually align the spreader rod when tightening the locking screw.

Each spreader rod is pre-marked with a scribe line for alignment on the insulator assembly. It is important that the spreader rods be centered and locked in place with these locking screws.

When both Spreader Rods "A and B" are in place, put a hose clamp on each end. Pull the skirt wires down one at a time and fasten each one to its appropriate spreader rod. Pull the skirt wire tight leaving about 3" to 4" inches of wire up for a pig tail to connect to the spreader rod ends using a #10 wire lug. The pig tail will allow for tensioning and removal

UH3001 SPREMER RDO "B"

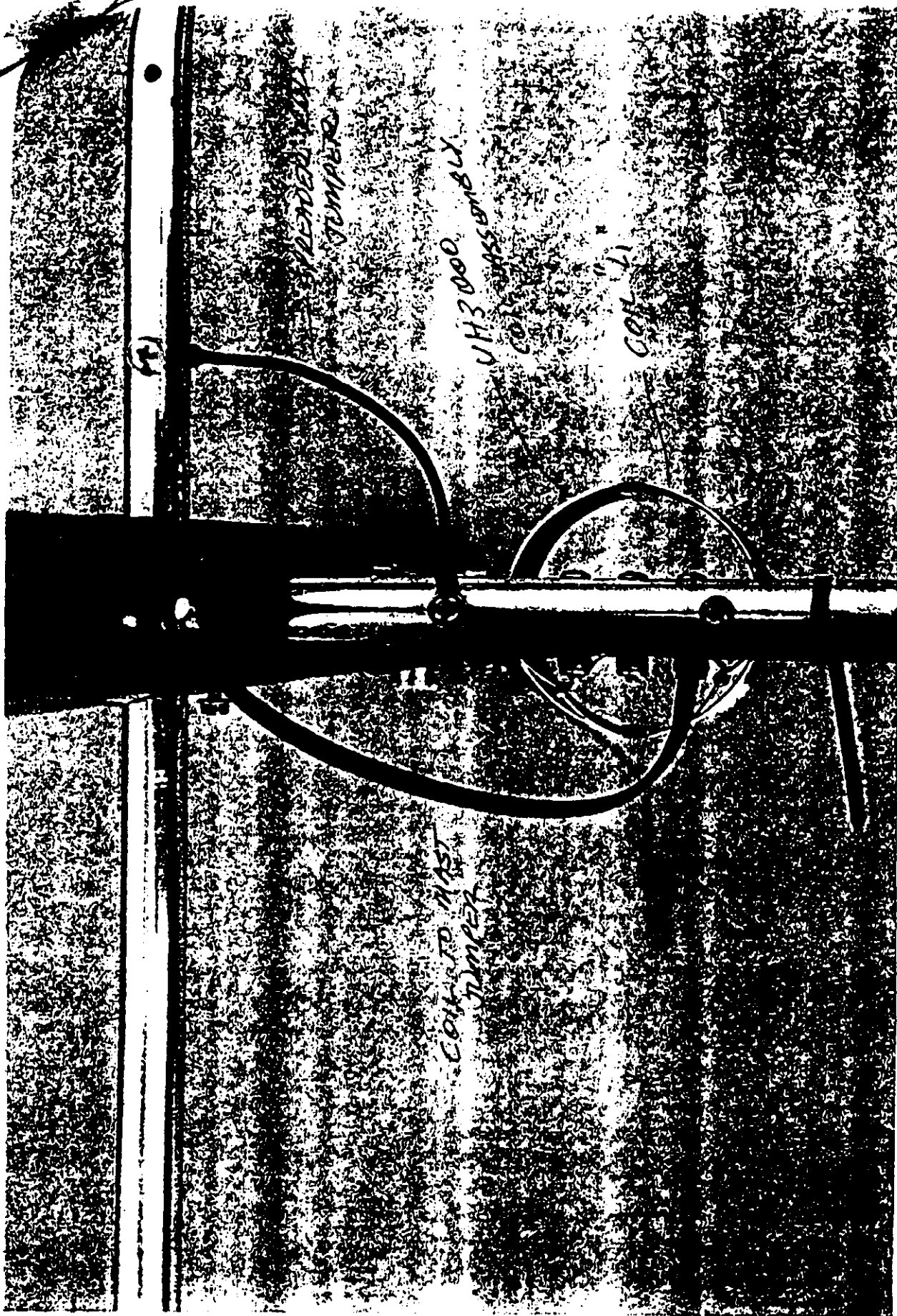
UH3001  
SPREMER RDO "A"



CH 10

CH 20

CH 30





of the skirt wires at a future time.

Tighten one skirt wire then move to the opposite end of the spreader rod and connect the corresponding skirt wire to the spreader rod. A slight bow in the spreader rod is acceptable and necessary to maintain rigidity in the skirt system. DO NOT OVERTENSION THE SKIRT WIRES, you can bend the spreader rod or the corresponding top hat radial arm above!

#### COIL ASSEMBLY INSTALLATION

The coil assembly (PN UH3000) contains the input matching coil "L1" and feed line connector "J1". The coil is situated electrically between the mast assembly (PN UH30) and system ground. The coil is connected to the mast by the coil jumper (PN UH3009) and to ground by the braided jumper at the radial system and ground rod. Three tap positions on the coil establishes resonance and input impedance. (Refer to the Tuning Procedures portion of this manual for specific details).

The coil assembly mounts to the insulator assembly (PN UH300) and Spreader Rod "A". Use a 1" 1/4" # 10 sheet metal screw (PN 101SS) for the rear mounting hole which also doubles as a tuning stub terminal connection. The 1 1/4" # 10 sheet metal screw is the terminating point on the spreader rod for the shield connections of Tuning Stub "Ca". Next, insert a 2 1/2" # 10 sheet metal screw into the hole provided on the insulator assembly just below Spreader Rod "A" on the opposite the side of the insulator from the coil assembly and tighten.

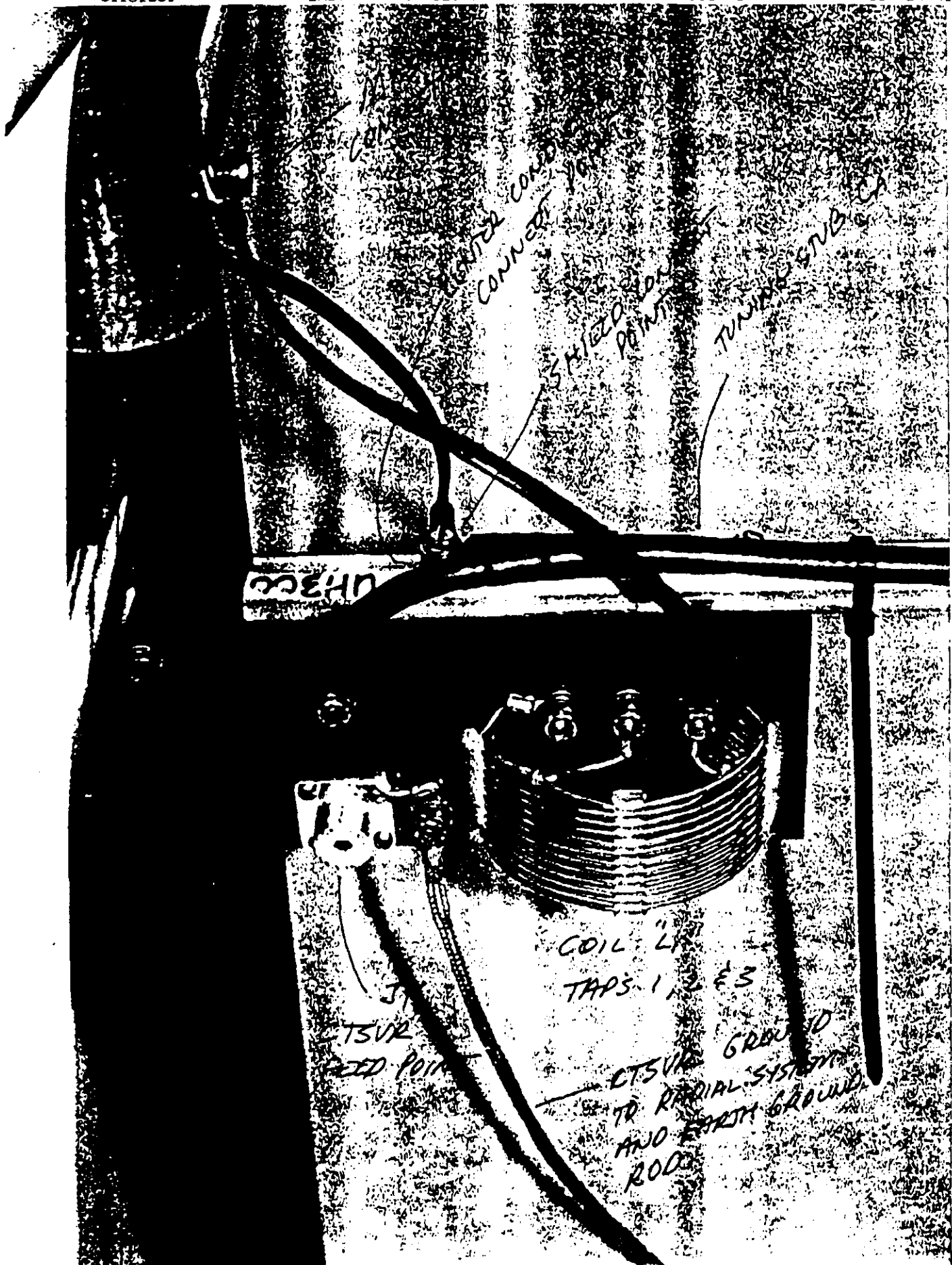
#### COAXIAL TUNING STUB INSTALLATION

The CTSVR is coupled to the feed line via a coaxial tuning stub (PN UH3003). Tuning stub "Ca" will have to be pruned during the tuning process. The tuning stub is a length of RG-213 coaxial cable with solder lugs for termination. The end of the tuning stub not terminated will be trimmed to length to obtain the proper resonance frequency and capped for weather proofing.

The coaxial shield of tuning stub "Ca" connect to Spreader Rod "A". The center conductor of tuning stub "Ca" connects to the coil assembly terminal marked "CA".

The tuning stub is routed along the spreader rod "A" and upward along the skirt wire and are tied off with tie wraps. The outer shields of the tuning stub is at the same RF potential as the spreader rod so there will be no interaction between the lengths of the tuning stub and where it mounts. Make the installation of the tuning stub as neat as possible. Take up any slack in the tuning stub as it is routed along the spreader rod up and onto the skirt wire.

Leave the end of the "A" tuning stub free so you can trim its length during tune up. After pruning, you will install an end cap on the tuning stub to prevent moisture from entering the coaxial cable which would





de-tune or cause shorting of the tuning stub. Once this cap is installed, you can tie it to the skirt wire.

The final jumper wire to connect is the coil assembly ground strap at connector "J1" of the coil assembly. Route the braided jumper along the insulator so that it will reach the #1/4-20 stainless steel bolt on the ground plate. Next, solder a 1/4" # 8 stud wire lug onto the braided jumper. Now reinstall the ground and radial system lugs and tighten the #1/4-20 lock nut. The assembly of the CTSVR is now complete. Now to install the feed line.

#### CTSVR FEED LINE

The feed point impedance of the CTSVR is nominally 50 Ohms and should be fed with 50 ohm impedance coaxial cable. We recommend using RG-213 or similar type for the feed line to lessen any line losses that might be experienced if the feed line length should exceed 200' and power levels above 500 watts are anticipated. The coil assembly is labeled "J1" where the feed line connects. Terminate the coaxial feed line with a PL-259 male connector and connect to "J1" on coil assembly PN #UH3000.

#### CTSVR TUNING PROCEDURES

The tuning procedure for the CTSVR is straight forward and simple. The procedure requires the pruning of the Coaxial Tuning Stub "Ca" and selection of the proper tap point on "L1" to obtain resonance and a 50 ohm input impedance.

Tuning Stub "Ca" is a length of RG-213 coaxial cable and has a capacitance value of approximately 250 pF before pruning. The RG-213 has a capacitance value of 2.49 pF per inch of length. Any coaxial cable substituted for these tuning stubs should have the same capacitance values and voltage ratings or the tuning procedures contained herein will not be correct.

Do not add additional lengths of cable due to the possibility of moisture induced failure of the tuning stub at the joints of the extensions.

#### CTSVR TUNING OPTIONS

The CTSVR will tune and match to a 50 Ohm feed line with less than 1.5:1 or better VSWR with a design height of 37' 4" for the frequency range of 1,470 KHZ +/- 50 KHZ:

To begin, select the Low tap point on "L1" and connect it to the mast assembly. Use only one tap point at a time when tuning or operating the CTSVR. You will tune for best VSWR by cutting/pruning tuning stub "Ca". Before cutting or pruning tuning stub "Ca", be sure the jumper is installed across spreader rods "A and B". When pruning the tuning stubs, make sure the braid and center conductor are not in contact with each other. Spread the braid away from the center conductor after each

pruning to prevent a short. If the tuning stub is shorted, you will experience a high VSWR condition with power applied.

Apply minimum power from your exciter (less than 2 watts for safety) or from your bridge to the CTSVR. Prune 1" lengths from the tuning stub and alternate between tap points 1, 2 and 3 until you are within 2:1 VSWR. Once under 2:1 VSWR, tighten the mast jumper to the tap point and cut 1/2" lengths until you achieve the best VSWR (typically 1.5:1 or better).

#### COAXIAL TUNING STUB END CAP PREPARATION

It is important to prepare and weather proof the ends of the tuning stubs to prevent moisture from entering the ends of the cable. Trim the end of the Coaxial Tuning Stub 3/4" and fold the shield.

Next, trim the excess shield off with a pair of cutters or scissors. Do Not Cut or Nick the center insulator material! This area provides an insulated gap between the center conductor and the shield. A nick or cut could eventually result in an arc-over of the tuning stub. Push the tuning stub into the end cap for a tight fit and seal.

USE A SILICONE SEALANT OR LUBRICANT on the end of the tuning stub and in the end cap assembly. An end cap failure can result in damage to the tuning stub requiring a replacement. Under no circumstance use electrical tape in place of the end caps provided. An arc-over will result with possible damage to your radio equipment and the tuning stub. DO NOT USE PLASTIC BAG TIES WITH WIRE OR ANY TYPE OF METALIC TIES to tie the tuning stubs or end caps to the skirt wires. The use of metallic ties could result in the possible failure of the tuning stubs and end caps!

0.1

trim off

0.1

### WARRANTY

Uni-Hat warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect, or to furnish a new part, in exchange for any part of any unit which under normal installation, use, and service discloses such defect within six months from date of purchase by original owner.

This warranty does not extend to any product which has been subjected to mis-use, accident, incorrect wiring that is not our own, improper installation or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacturer or specification.

Uni-Hat reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation or installation costs that may be incurred by purchaser. Uni-Hat's sole liability is the remedy of any defect for six months. Uni-Hat is not responsible for personal injury or property damage resulting from the improper or careless installation or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated six months after the last unit of its type and design has been manufactured by us.

You must furnish model number, date, place and proof of purchase. Such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item number involved. Do Not return anything until requested to do so. No warranty card is furnished. You must supply the above information.

Uni-Hat Engineering and Marketing Group  
3816 Royal Lane Suite 100  
Dallas, Texas 75229  
214-352-4623  
(Patent Pending)

# **INSTRUCTION MANUAL**

## **LPB MODEL ATU-60/SF**

### **ANTENNA TUNING UNIT**

*for use with*

**MORAD ANTENNA**

**Revision C 11/01/96**

**LPB**

28 Bacton Hill Rd., Frazer, PA 19355. P: 610-644-1123, F: 610-644-8651, E: [lpbsales@lpbinc.com](mailto:lpbsales@lpbinc.com)

## ***LPB Model ATU-60/SF Antenna Tuning Unit***

### **TABLE OF CONTENTS**

| <b><u>Section</u></b> | <b><u>Description</u></b>     | <b><u>Page</u></b> |
|-----------------------|-------------------------------|--------------------|
| <b>1.0</b>            | <b>Introduction</b>           | <b>2</b>           |
| <b>2.0</b>            | <b>Limited Warranty</b>       | <b>2</b>           |
| <b>3.0</b>            | <b>Service Information</b>    | <b>2</b>           |
| <b>Figure 1</b>       | <b>Schematic Diagram</b>      | <b>3</b>           |
| <b>Figure 2</b>       | <b>External Connections</b>   | <b>4</b>           |
| <b>4.0</b>            | <b>Circuit Description</b>    | <b>5</b>           |
| <b>5.0</b>            | <b>Installation</b>           | <b>5</b>           |
| <b>6.0</b>            | <b>Operating Instructions</b> | <b>5</b>           |
| <b>List 1</b>         | <b>Parts List</b>             | <b>7</b>           |



## **Attachment 4**

*William L. Zawila*  
ATTORNEY AT LAW

12580 BROOKHURST STREET  
GARDEN GROVE, CALIFORNIA 92640  
(714) 638-8040

May 18, 2001

David Doon, Agent  
Federal Communications Commission  
5653 Stoneridge Drive - Suite 105  
Pleasanton, CA 94588

BY FAX

Re: Radio Station KKFO(AM), Coalinga, CA  
Reference No.: EB-01-SF-108  
Enclosed Documents  
Your Letter of April 18, 2001

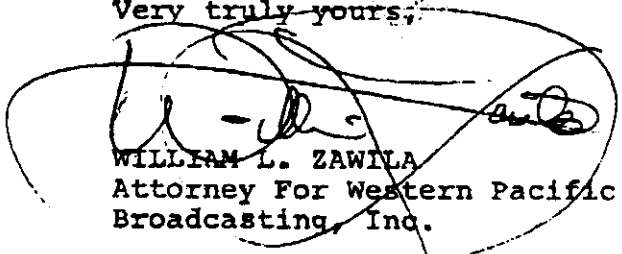
Dear Mr. Doon:

Enclosed you will find a response to your letter of April 18, 2001, regarding Radio Station KKFO(AM), Coalinga, California.

Per your request, the following information and documents are organized to correspond with the numbers set forth in your letter.

WLZ/jc  
encls

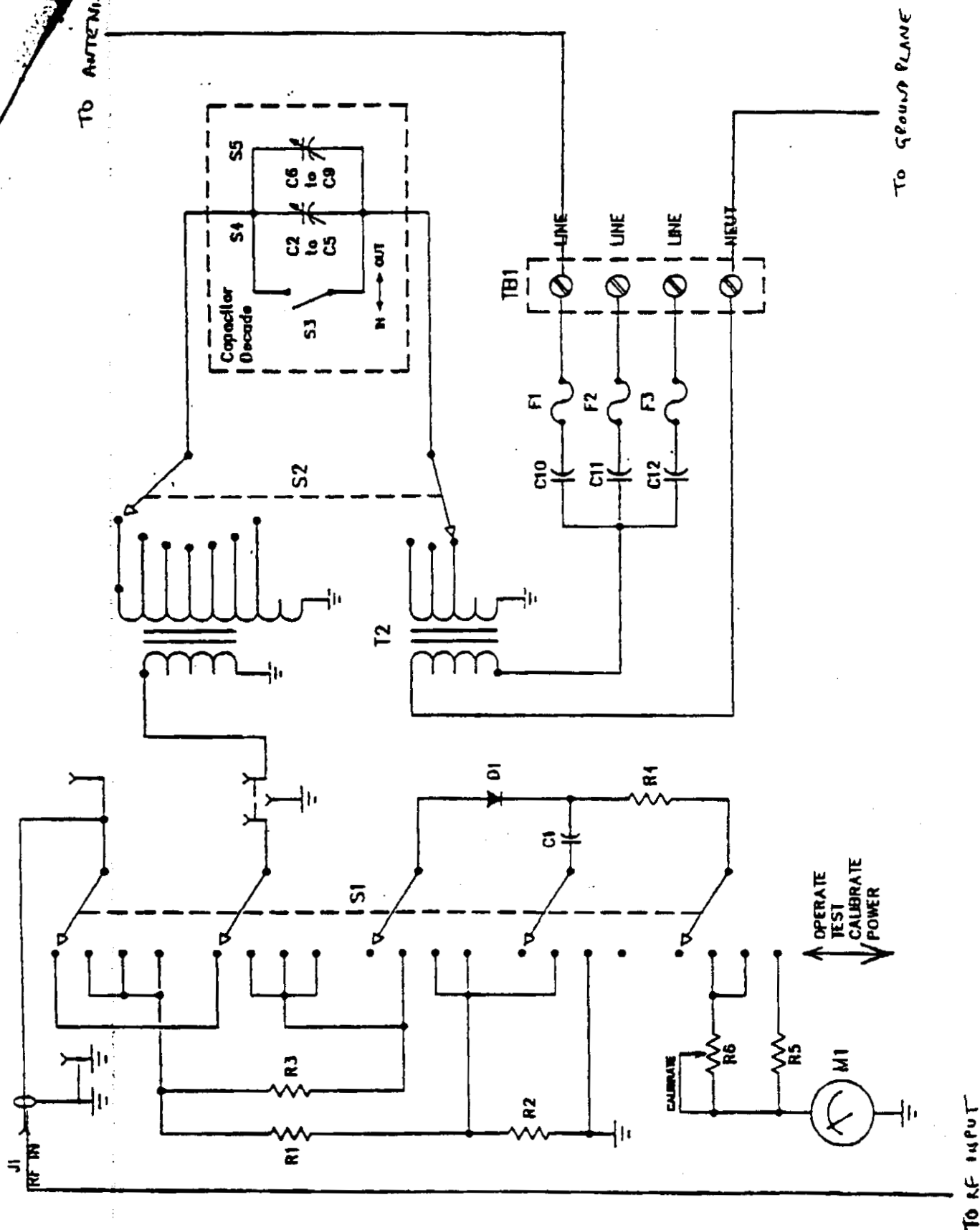
Very truly yours,

  
WILLIAM L. ZAWILA  
Attorney For Western Pacific  
Broadcasting, Inc.



ITEM #3

Attached are copies of documents reflecting equipment used in the KKFO(AM) STA operation.



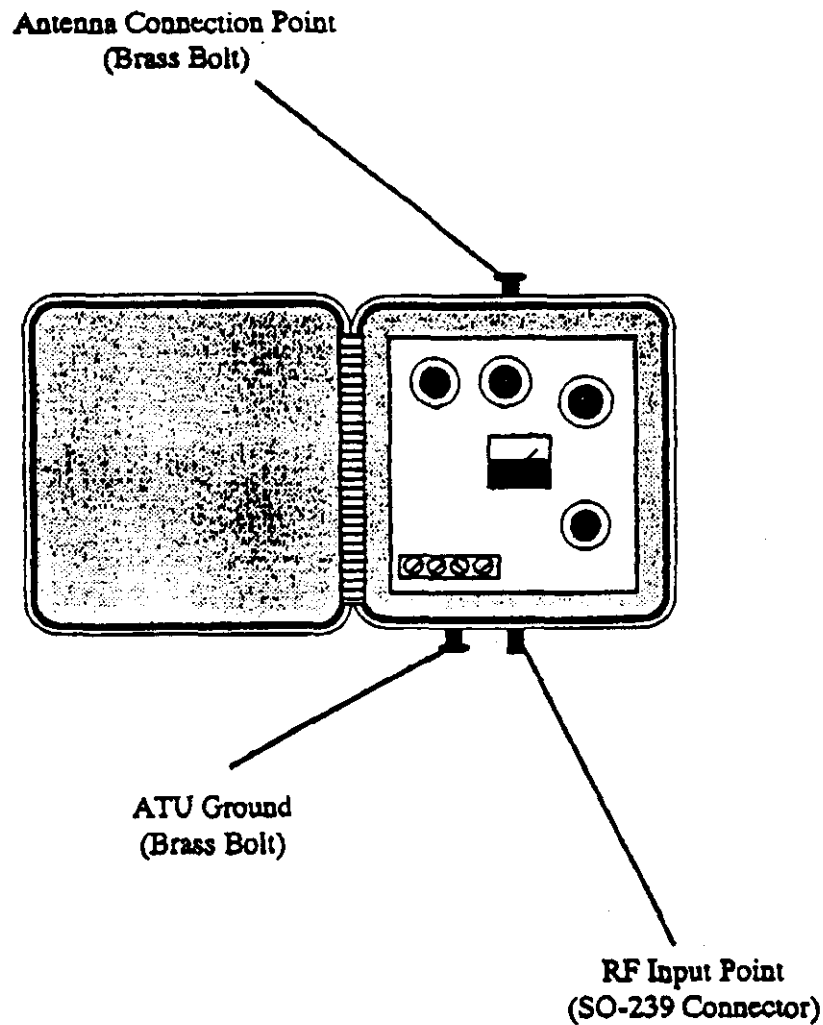
Schematic Diagram (Figure 1)

**LPB**

28 Bacton Hill Rd., Frazer, PA 19355. P: 610-644-1123, F: 610-644-8651, E: lpbsales@lpbinc.com

## LPB Model ATU-60/SF External Connections

(Figure 2)

**LPB**

28 Bacton Hill Rd., Frazer, PA 19355. P: 610-644-1123, F: 610-644-8651, E: [lpbsales@lpbinc.com](mailto:lpbsales@lpbinc.com)

40

## Circuit Description

We do not recommend user repair of this equipment, but furnish the schematic diagram in Figure 1. It will assist in isolating any problem.

### 5.0 Installation

The LPB ATU-60/SF is intended to be mounted to the same pole as the Morad antenna. The mounting holes (two at top and two at bottom), are 8 inches apart horizontally and 12-3/4 inches apart vertically.

All required connection points are on the outside of the LPB ATU-60/SF: (See Figure 2)

- Antenna connection brass bolt at the top
- Ground Plane connection brass bolt at the bottom
- RF (transmitter) input connection SO-239 at the bottom.

The transmitter input connection is an SO-239 female UHF connector. The transmitter RF output is to be connected to the ATU RF input via RG-8/U 50  $\Omega$  coaxial cable with PL-259 male UHF connectors.

All connections to the LPB ATU-60/SF must be thoroughly weatherproofed.

Please note that the meter in the ATU-60/SF reads POWER IN to 30 watts. The circuit has been converted so that the full scale is actually 60 watts. It is necessary to multiply the meter reading by 2 to determine the actual POWER IN. A conversion table directly below the meter includes four readings as follows: Power is 2 times Meter Reading

|              |     |    |      |    |
|--------------|-----|----|------|----|
| Actual Watts | 15  | 30 | 45   | 60 |
| Meter Watts  | 7.5 | 15 | 22.5 | 30 |

### 6.0 Operating Instructions

**CAUTION** To prevent possible damage to the ATU:

- The transmitter must be at maximum 15 watts (7.5 watts on the meter) until matching is complete.
- The ATU Function Switch must not be left in POWER, CAL, or TEST for more than 3 minutes.

1. Turn the transmitter OFF, and insure that the transmitter and ATU are properly connected with RG-8/U 50  $\Omega$  coaxial cable, and that the ATU is properly connected to the antenna at the top connection and the antenna ground plane at the bottom connection.

**LPB**

28 Bacton Hill Rd., Frazer, PA 19355. P: 610-644-1123, F: 610-644-8651, E: lpbsales@lpbinc.com

## 2. Initial ATU control positions:

|                     |                       |
|---------------------|-----------------------|
| Function Switch     | Power                 |
| Tap Select Switch   | 72 $\Omega$           |
| Decade Slide Switch | Out                   |
| Cal Potentiometer   | Full Counterclockwise |

3. Turn the transmitter ON, and set the transmitter to a maximum 15 W (7.5 W on the meter).
4. Turn the ATU Function Switch to CAL. Adjust the CAL Potentiometer until the meter needle is at the CAL mark at full scale on the meter.
5. Turn the ATU Function Switch to TEST.
6. Rotate the TAP SELECT Switch for minimum meter reading.
7. Move the Decade Slide Switch to the IN position.
8. Rotate the 1000pf Capacitor Switch as a rough control, then the 100pf switch as a fine control, while watching the meter for a lower reading than in Step 6. (NOTE: Do not operate the ATU-60/SF with both Capacitor Switches in the zero position.)
9. Repeat step 6 and step 8 in sequence trying for the lowest possible meter reading (VSWR).
10. After you have the best possible match, with the VSWR in the green (2:1 or below), turn the ATU Function Switch to POWER. Adjust the transmitter to full output power of 100 watts (the meter will read 30 watts). Turn the ATU Function Switch to CAL, and adjust the CAL Potentiometer to full scale if necessary. Turn the ATU Function Switch to TEST and verify that the VSWR hasn't changed.
11. Matching is now complete. Turn the ATU Function Switch to OPERATE.

## LIST 1

## LPB ATU-60/SF PARTS LIST

DATE: 11/01/96

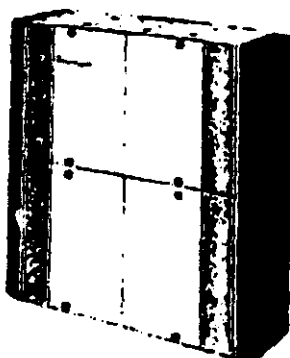
| Note | Qty. | Part Number | Symbol        | Description                                |
|------|------|-------------|---------------|--|
|      | 1    | 671-2128-D  | NONE          | TCU-30 P C BOARD, BLANK                    |
|      | 3    | 766-1247    | R1, R2, R3    | 50 $\Omega$ , 25 W, 5% RESISTOR            |
|      | 1    | 762-2141    | R4            | 6.8K $\Omega$ , 0.5 W, 5% RESISTOR         |
| 1    | 2    | 775-1185    | R5, R6        | 100 K $\Omega$ TRIMPOT, HORIZONTAL MOUNT   |
|      | 1    | 545-2173    | M1            | 1" DC AMMETER 300 $\mu$ A SPECIAL          |
|      | 1    | 781-1001    | D1            | 1N34A SIGNAL DIODE                         |
|      | 1    | 174-1217    | C1            | 0.01 $\mu$ F, 100V, CERAMIC DISC CAPACITOR |
|      | 1    | 171-1176    | C2            | 1000pF, 500V, 5% DM CAPACITOR              |
|      | 1    | 171-1197    | C3            | 2000pF, 500V, 5% DM CAPACITOR              |
|      | 1    | 171-1212    | C4            | 3000pF, 500V, 5% DM CAPACITOR              |
|      | 1    | 171-1221    | C5            | 3900pF, 500V, 5% DM CAPACITOR              |
|      | 1    | 171-1095    | C6            | 100pF, 500V, 5% DM CAPACITOR               |
|      | 1    | 171-1117    | C7            | 200pF, 500V, 5% DM CAPACITOR               |
|      | 1    | 171-1132    | C8            | 300pF, 500V, 5% DM CAPACITOR               |
|      | 1    | 171-1140    | C9            | 390pF, 500V, 5% DM CAPACITOR               |
|      | 3    | 175-1075    | C10, C11, C12 | 0.1 $\mu$ F, 1000V, 10% PAP CAPACITOR      |
|      | 1    | 824-2175-A  | S1            | 5 POLE, 4 POS ROTARY SWITCH                |
|      | 1    | 824-2176-A  | S2            | 2 POLE, 21 POS ROTARY SWITCH               |
|      | 1    | 823-1005    | S3            | SPDT SLIDE SWITCH, PC MOUNT                |
|      | 2    | 824-2177-A  | S4, S5        | 11 POSITION ROTARY DECADE SWITCH           |
|      | 3    | 411-1004    | NONE          | 2" SKIRTED KNOB W/ALUMINUM CAP             |
|      | 4    | 201-1006    | T1, T2        | 1.1" FERRITE TOROIDS, GLUED PAIR           |
|      | 1    | 191-1007    | TB1           | 4 POSITION TERMINAL BLOCK, PC MOUNT        |
|      | 1    | 175-1075    | C10           | 0.1 $\mu$ F, 1000V, 10%, PAP CAPACITOR     |
|      | 3    | 692-1021    | F1, F2, F3    | 4 AMP, 250V, NO-DELAY FUSE                 |
|      | 1    | 191-1007    | TB1           | 4 POSITION TERMINAL BLOCK, PC MOUNT        |

## Notes:

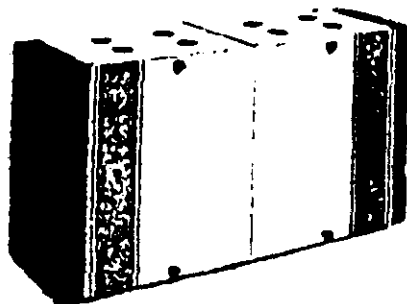
1. R5 is mounted on the back of the PC board.

**LPB**

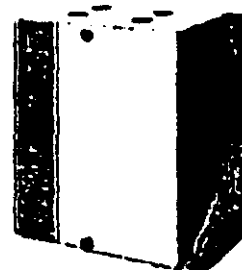
28 Bacton Hill Rd., Frazer, PA 19355. P: 610-644-1123, F: 610-644-8651, E: lpbsales@lpbinc.com

**LPB<sup>®</sup>****AM BROADCAST  
TRANSMITTERS****AM-100P**

Output : Adjustable 25-100 Watts  
 Dimensions : 24"H x 24"W x 6.5"D  
 Shipping Weight : 66 lbs.  
 Power Consumption : 430 Watts  
 (117VAC, single-phase)

**AM-60P**

Adjustable 10-60 Watts  
 12"H x 24"W x 6.5"D  
 41 lbs.  
 250 Watts

**AM-30P**

Adjustable 2-30 Watts  
 12"H x 12"W x 6.5"D  
 23 lbs.  
 150 Watts

**All "P" Series Transmitters are FCC Part 73 Type Accepted  
 and meet or exceed the following specifications**

RF Power Output  
 RF Power Adjustment  
 RF Power Indicator  
 Type of Emissions  
 Frequency Range  
 RF Output Impedance  
 Frequency Stability

RF Harmonic Suppression  
 Carrier Shift  
 Noise Level  
 Audio Input Impedance  
 Audio Input Level  
 Audio Frequency Response  
 Audio Distortion  
 Modulation Control  
 Modulation Indicator  
 Power Input

Adjustable 25 to 100 watts  
 Internal  
 Internal Meter  
 30A3 Amplitude Modulation  
 520 to 1710 kHz  
 50 Ohm unbalanced SO-239 connectors  
 $\pm .001\%$ ,  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , 105 to 128 VAC line  
 ( $-4^{\circ}\text{F}$  to  $+144^{\circ}\text{F}$ )  
 $<45\text{dB}$  below carrier  
 $<2\%$ , 0-100% modulated carrier  
 $<52\text{dB}$  below 100% modulated carrier  
 600 Ohm, transformer balanced  
 $-15\text{dBm}$  to  $+10\text{dBm}$  for 100% modulation  
 20hz to 15kHz  $\pm 1.0\text{dB}$   
 $<2\%$ , 95% modulation  
 Internal Adjustment  
 Internal Meter  
 117 VAC, 50/60Hz

**LPB, Inc.** 28 Bacton Hill Road, Frazer, PA 19355. Phone (610) 644-1123, Fax (610) 644-8651

E-Mail: [LPBINC@aol.com](mailto:LPBINC@aol.com)

# **INSTRUCTION MANUAL**

**for**

**MODEL AM-60P**



**PSSA / PSRA**

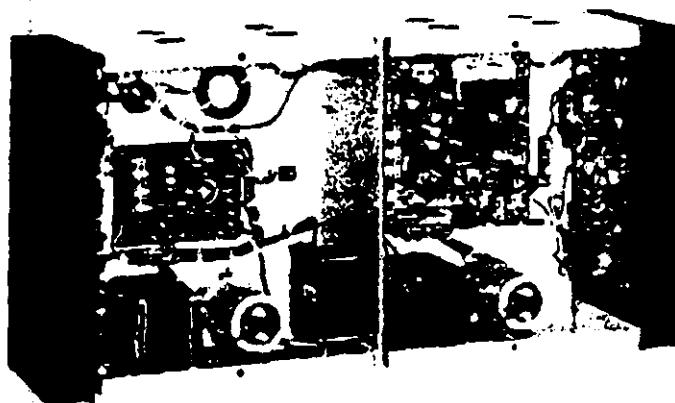
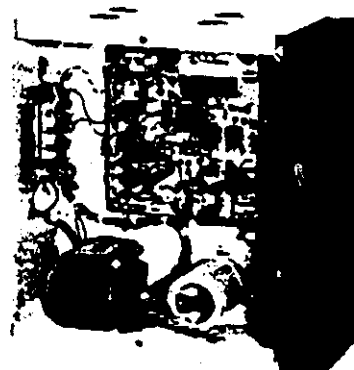
**LOW POWER**

**AUTHORIZATION**

**LPRB, Inc. 28 Sarton Hill Road, Frazer, PA. 19355 (610) 644-1123**

**Fax No. (610) 644-8651**



**LPB<sup>®</sup>***AM Broadcast Transmitters**AM-60P**AM-30P*

Since 1960, LPB has been the internationally recognized leader in low power AM broadcasting. LPB uses the very latest RF technology to provide the most rugged and economical transmitter for low power commercial applications, travelers' information and carrier current systems.

LPB transmitters are completely solid-state. The crystal oscillator operates at six times the carrier frequency with digital countdown circuitry. A high-stability oscillator circuit is used for FCC Part 73 applications. A modular design using a pair of balanced emitter output transistors provide up to 30 watts of RF power that can withstand any output mismatch or short circuit condition. The 60 watt transmitter uses two 30 watt modules with dual power supplies and an RF power combiner. A computer designed elliptic function output filter provides the highest degree of RF harmonic suppression.

The AM-30 and AM-60 series transmitters use an internal meter to monitor modulation level and RF power output. Modulation level on the AM-5 is indicated by a quick response LED peak flasher set to illuminate at 100% peak modulation. This indicates true peak modulation of the transmitter and provides a means of maintaining maximum undistorted modulation of the signal. RF power on the AM-5 is monitored by a second LED that also serves as a "power on" indicator. RF output power is continuously variable on all transmitters so that a precise setting can be chosen by the user.

All LPB low power transmitters are designed for universal application including AM stereo. With a 50 ohm unbalanced RF output, any transmitter can readily interface with direct radiating systems using impedance matched radiators. The companion TCU-30 Transmitter Coupling Unit is used for carrier current installations and other applications utilizing non-standard radiating elements.